

BANK INDONESIA
BANK SENTRAL REPUBLIK INDONESIA

Hedging Techniques

Dr. Ian Giddy
New York University



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Resources in Finance

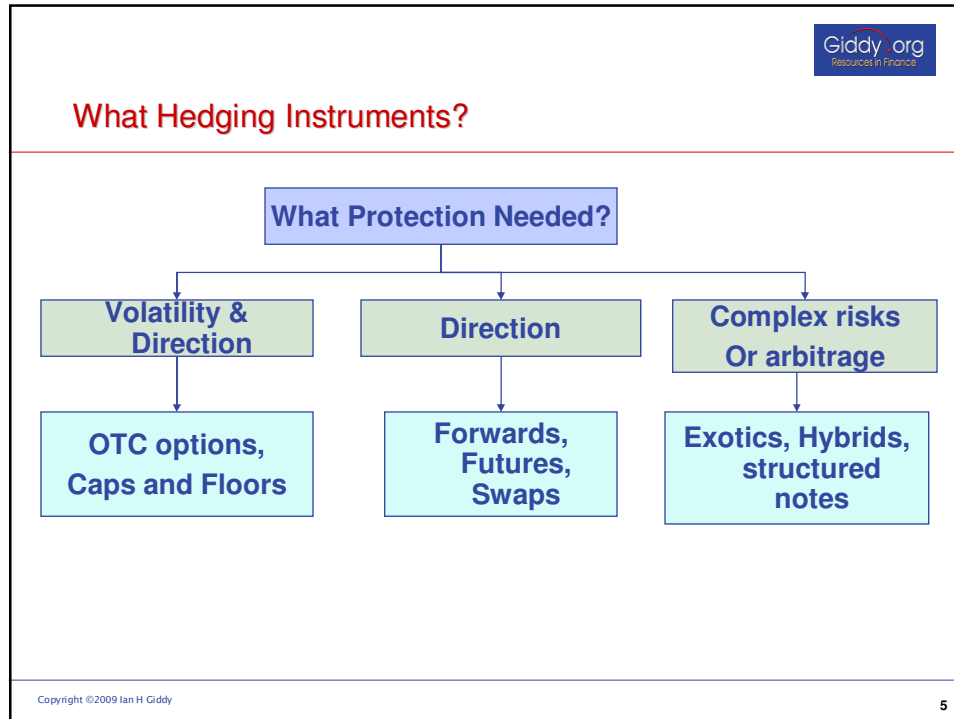
Techniques of Hedging


- A brief comparison of hedging tools
- Forwards, futures, swaps
- Asset-liability matching
- Pricing and linkages among the tools
- Uses and abuses of options
- When to use, and when not to use



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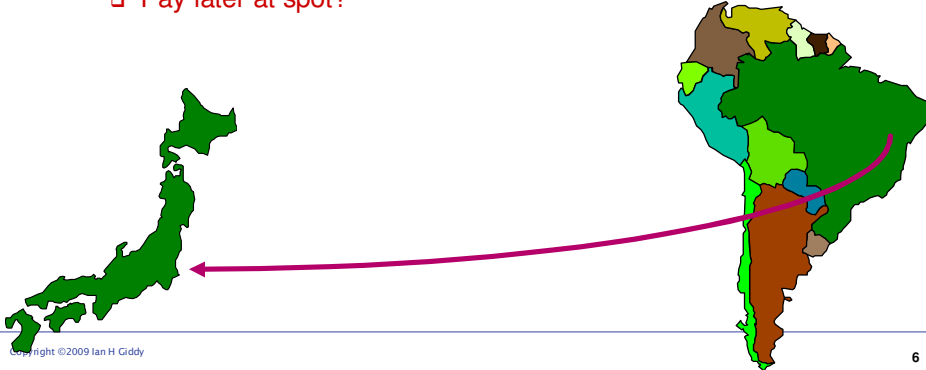
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Tools for Hedging

- Petrobras has to pay for equipment from Japan, in Japanese yen, in 3 months
 - Borrow and pay now?
 - Use a forward contract/FX swap?
 - Pay later at spot?



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Forward Contracts, Futures and Money Market Hedging

- ❑ Money market hedging: match currency of assets and liabilities
- ❑ Forwards: Agreement to exchange currencies at certain exchange rate in the future
- ❑ Futures: Exchange-traded contracts for notional future delivery, minimizing default risk via marking-to-market
- ❑ Currency swap: match payments on foreign-currency debt
- ❑ Interest-rate swap: change floating cost to fixed

A Typical Forward Exchange Contract

- ❑ We agree today to pay a certain price for a currency in the future






Forward Quotations

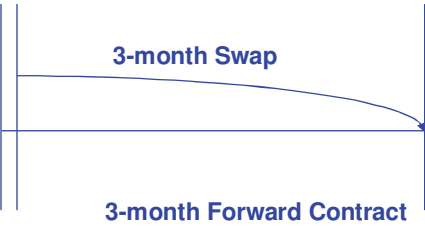
Mar 13		Closing mid-point	Change on day	Bid/offer spread	Day's mid		One month		Three month		One year	
					High	Low	Rate	%PA	Rate	%PA	Rate	%PA
Europe												
Czech Rep.	(Koruna)	20.6171	-0.2659	996-346	20.7020	20.3500	20.6407	-1.4	20.6556	-0.7	20.6591	-0.2
Denmark	(Danish Krone)	5.7833	-0.0407	821-845	5.7955	5.7529	5.7895	-1.3	5.7973	-1.0	5.8016	-0.3
Hungary	(Forint)	232.255	0.2058	406-695	232.600	226.490	233.615	-7.0	235.855	-6.1	245.545	-5.4
Norway	(Nor. Krone)	6.8446	-0.1236	419-472	6.8780	6.7900	6.8539	-1.6	6.8681	-1.4	6.8850	-0.6
Poland	(Zloty)	3.4935	-0.0411	891-979	3.5205	3.4387	3.4988	-1.8	3.5028	-1.1	3.5018	-0.2
Russia	(Rouble)	34.7333	-0.4265	303-363	35.1800	34.5920	35.1223	-13.3	35.9828	-13.9	40.5813	-14.4
Sweden	(Krona)	8.6344	-0.1089	313-374	8.6583	8.5260	8.6356	-0.2	8.6253	0.4	8.5685	0.8
Switzerland	(Fr)	1.1883	-0.0009	879-886	1.1933	1.1837	1.1876	0.6	1.1857	0.9	1.1736	1.2
Turkey	(New Lira)	1.7138	0.0043	126-149	1.7156	1.6911	1.7298	-11.2	1.7580	-10.1	1.8913	-9.4
UK	(£)	1.3971	0.0162	969-973	1.4069	1.3865	1.3972	-0.1	1.3977	-0.2	1.4018	-0.3
Euro	(Euro)	1.2891	0.0094	889-893	1.2956	1.2864	1.2890	0.1	1.2893	0.0	1.2931	-0.3
SDR	(SDR)	0.6783	-0.0023	-	-	-	-	-	-	-	-	0.0
Americas												
Argentina	(Peso)	3.6488	0.0001	473-503	3.6510	3.6440	3.7526	-33.2	3.9251	-28.2	4.7271	-22.8
Brazil	(Real)	2.3122	-0.0148	116-128	2.3155	2.2742	2.3338	-11.1	2.3641	-8.8	2.4741	-6.5
Canada	(Canadian \$)	1.2751	-0.0157	748-754	1.2842	1.2628	1.2750	0.1	1.2737	0.4	1.2657	0.7
Mexico	(Mexican Peso)	14.5863	-0.3362	838-887	14.7280	14.5475	14.6823	-7.8	14.8300	-6.6	15.4522	-5.6
Peru	(New Sol)	3.1770	-0.0071	755-785	3.1870	3.1670	3.1910	-5.3	3.2138	-4.6	3.2870	-3.3
USA	(US \$)	-	-	-	-	-	-	-	-	-	-	0.0
Pacific/Middle East/Africa												
Australia	(A\$)	1.5208	-0.0243	202-214	1.5214	1.5202	1.5193	1.2	1.5173	0.9	1.5110	0.6
Hong Kong	(HK \$)	7.7528	-0.0009	526-530	7.7541	7.7526	7.7512	0.3	7.7480	0.3	7.7413	0.1
India	(Indian Rupee)	51.4850	-0.4050	800-900	51.7700	51.1500	51.6875	-4.7	51.9800	-3.8	52.7725	-2.4
Indonesia	(Rupiah)	11980.0	-5.0000	000-000	11990.0	11975.0	12072.5	-9.2	12282.5	-9.9	13292.5	-9.9

Source: ft.com

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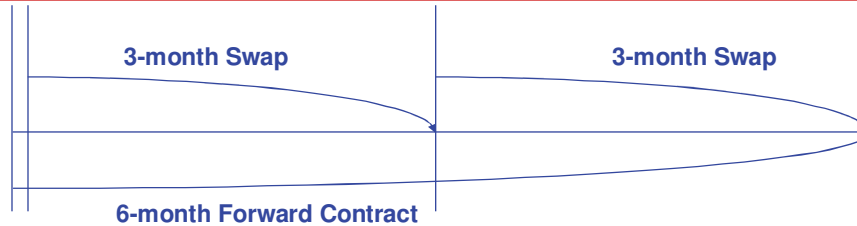
The FX Swap Hedge



- | Dealers typically hedge a forward foreign-exchange commitment with a spot plus “FX Swap”: spot sale plus forward purchase of a foreign currency
- | The FX swap rate is determined by the interest differential

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The Roll-Over Swap Hedge




- | Dealers often hedge a long-term foreign-exchange commitment with shorter-term contracts, which are “rolled over” as they come due
- | Corporations themselves do this too.

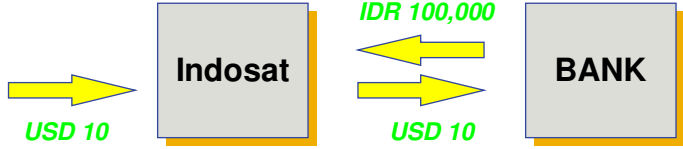
Futures – Like Forwards, But Traded on an Exchange

BRITISH POUND/US\$ (SMALL) (NYBOT:MP)					
Market		Open	High	Low	Last
MP.H09.E	Mar.2009.(F)	1.3977	1.4008	1.3960	1.3969
MP.M09.E	Jun.2009.(F)	1.3967	1.3967	1.3967	1.3970
MP.U09.E	Sep.2009.(F)	1.3958	1.3958	1.3958	1.3958
CANADIAN \$ (CME:CD)					
Market		Open	High	Low	Last
CD.Y55	Cash	0.7803	0.7883	0.7803	0.7847
CD.H09	Mar.2009	0.7870	0.7872	0.7850	0.7845
CD.M09	Jun.2009	0.7819	0.7920	0.7815	0.7854
CANADIAN \$ (S.B.S) (CME:8C)					
Market		Open	High	Low	Last
8C.H09.E	Mar.2009.(F)	0.7823	0.7919	0.7789	0.7845
8C.M09.E	Jun.2009.(F)	0.7830	0.7930	0.7797	0.7854
8C.U09.E	Sep.2009.(F)	0.7910	0.7940	0.7825	0.7870
CHINESE RENMINBI/\$ (CME:RMB)					
Market		Open	High	Low	Last
RMB.H09.E	Mar.2009.(F)	0.14595	0.14595	0.14595	0.14623
RMB.J09.E	Apr.2009.(F)	0.14634	0.14638		0.14605
RMB.K09.E	May.2009.(F)	0.14620	0.14640		0.14579
EURO FX (CME:EC)					
Market		Open	High	Low	Last
EC.Y55	Cash	1.2880	1.2911	1.2878	1.2897
EC.H09	Mar.2009	1.2930	1.2930	1.2875	1.2899
EC.M09	Jun.2009	1.2893	1.2930	1.2875	1.2901

Source: quotes.ino.com




A Currency Swap: Used to Hedge Debt

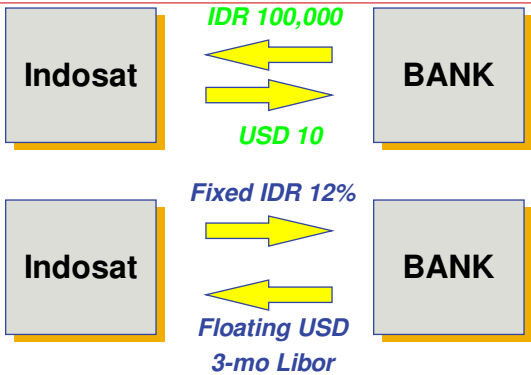


*Indosat issues dollar debt, but wants rupiah financing
so exchanges its dollars for IDR equivalent
at today's spot exchange rate*

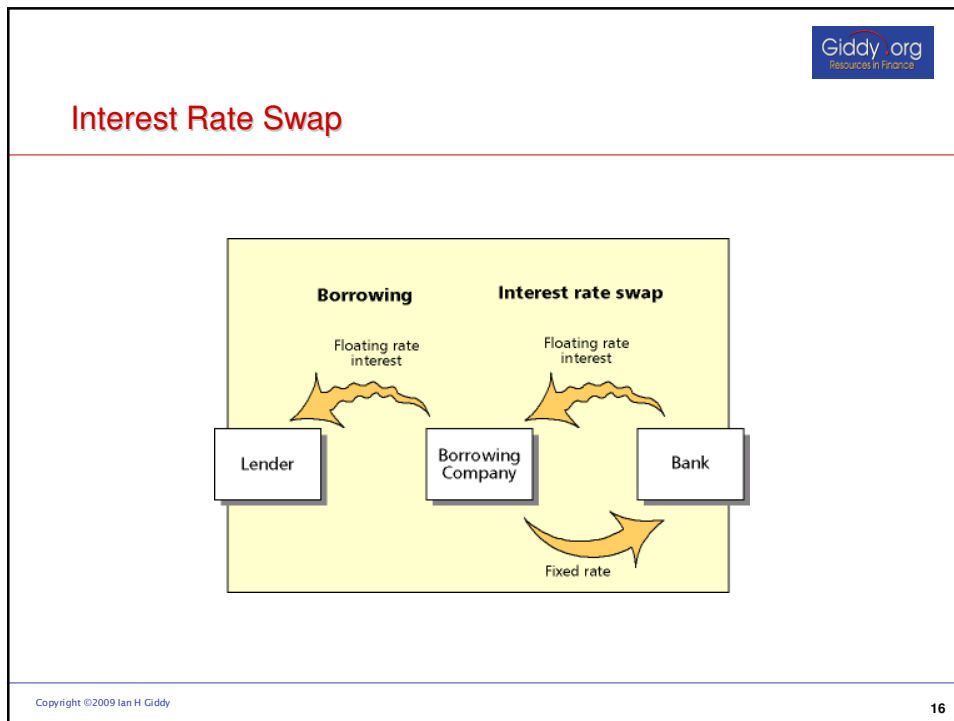
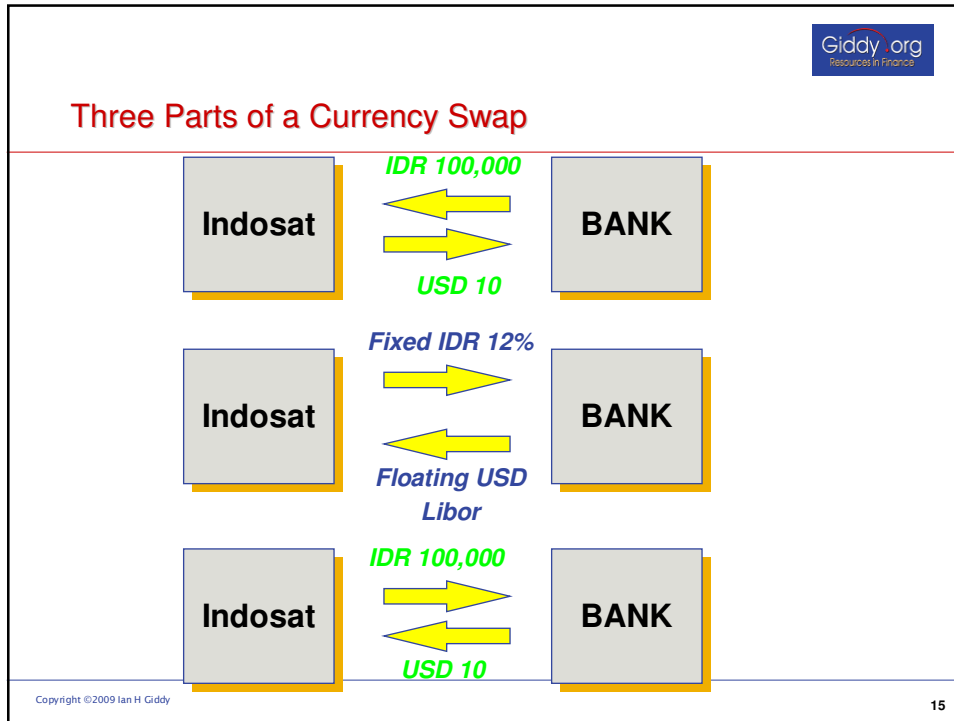
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Periodic Exchange of Interest



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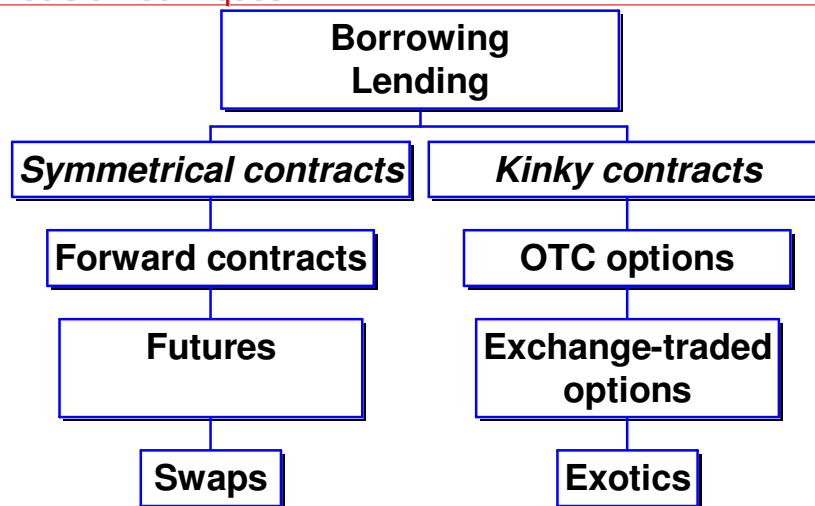


Swap Quotations

Mar 13	Euro-€		£ Stig.		SwFr		US \$		Yen	
	Bid	Ask	Bid	Ask	Bid	Ask	Bid	Ask	Bid	Ask
1 year	1.78	1.83	1.83	1.86	0.56	0.62	1.40	1.43	0.73	0.79
2 year	1.96	2.01	2.24	2.28	0.76	0.84	1.61	1.64	0.73	0.79
3 year	2.26	2.31	2.51	2.55	1.08	1.16	1.92	1.95	0.77	0.83
4 year	2.52	2.57	2.75	2.80	1.38	1.46	2.21	2.24	0.83	0.89
5 year	2.73	2.78	2.95	3.00	1.64	1.72	2.42	2.45	0.88	0.94
6 year	2.91	2.96	3.10	3.15	1.85	1.93	2.61	2.64	0.93	0.99
7 year	3.06	3.11	3.23	3.28	2.02	2.10	2.75	2.78	0.99	1.05
8 year	3.18	3.23	3.34	3.39	2.16	2.24	2.84	2.87	1.05	1.11
9 year	3.29	3.34	3.43	3.48	2.28	2.36	2.93	2.96	1.12	1.18
10 year	3.38	3.43	3.50	3.55	2.37	2.45	3.01	3.04	1.19	1.25
12 year	3.53	3.58	3.65	3.72	2.50	2.60	3.12	3.15	1.30	1.38
15 year	3.70	3.75	3.80	3.89	2.61	2.71	3.23	3.26	1.45	1.53
20 year	3.81	3.86	3.77	3.90	2.57	2.67	3.23	3.26	1.64	1.72
25 year	3.69	3.74	3.67	3.80	2.37	2.47	3.21	3.24	1.72	1.80
30 year	3.55	3.60	3.62	3.75	2.21	2.31	3.21	3.24	1.73	1.81

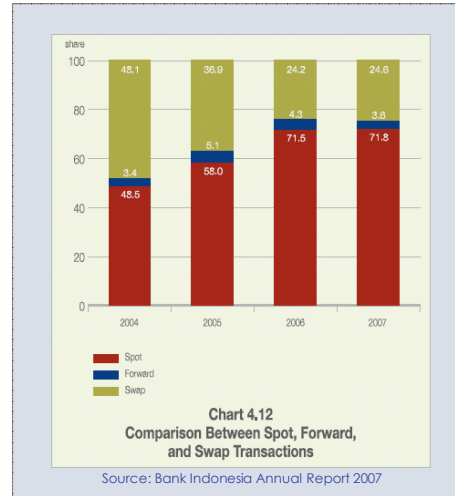
Bid and ask rates as of close of London business. US \$ is quoted annual money actual/360 basis against 3 month Libor. £ and Yen quoted on a semi-annual actual/365 basis against 6 month Libor. Euro/Swiss Franc quoted on annual bond 30/360 basis against 6 month Euribor/Libor with exception of the 1 year rate which is quoted against 3 month Euribor/Libor. Source: ICAP plc. Source: ft.com

Managing Exchange Risk: Tools & Techniques



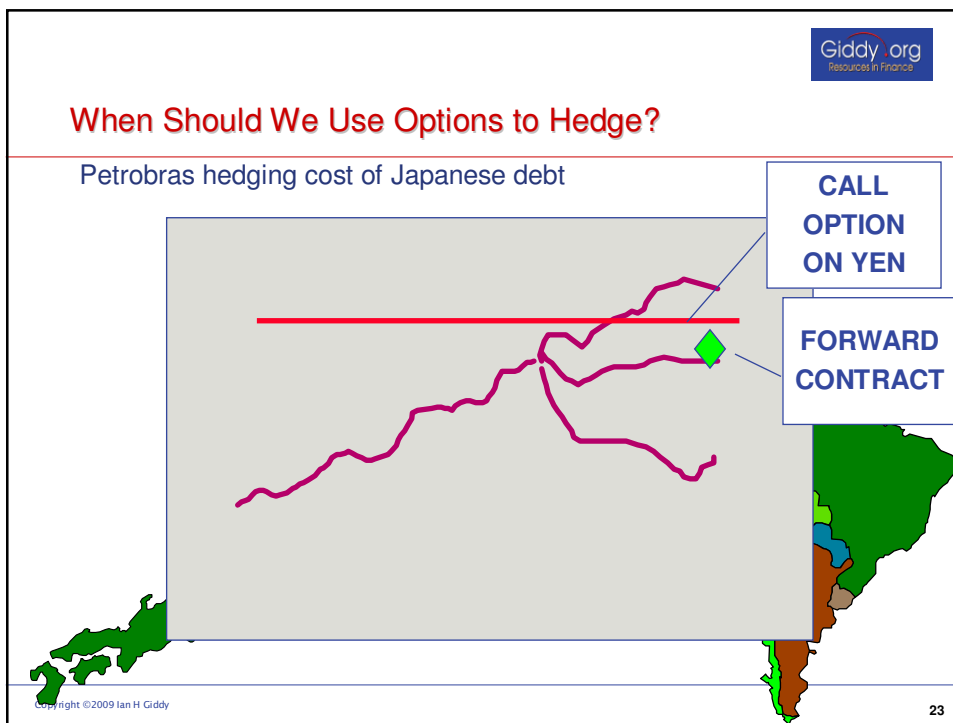
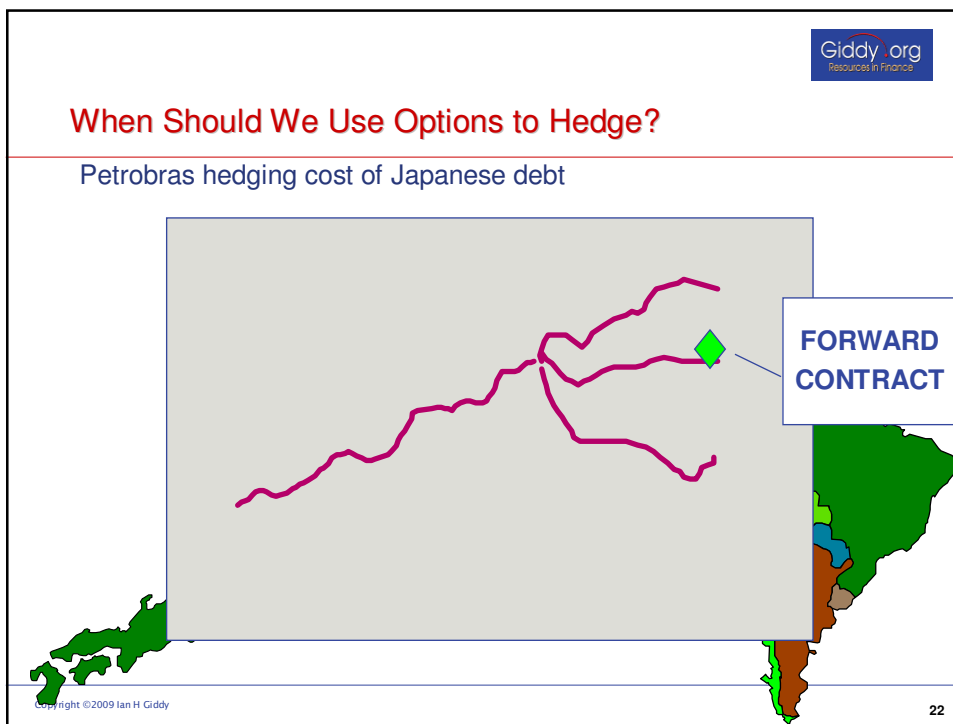
Spot, Forwards and Swaps in Indonesia

- Forward and swap transactions are necessary for hedging
- But they are declining as a percentage of the total in Indonesia



“Cost of Hedging” is Neutral

Type of Hedge	Cost of Hedging
Forward	Forward premium
Money Market Hedge (Borrow to match assets)	Interest rate differential
Do nothing	Expected rate of change of exchange rate



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Option Hedges

Questions about options:

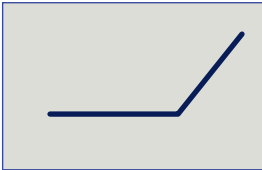
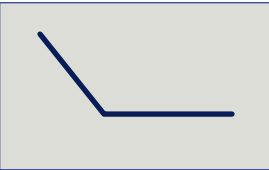

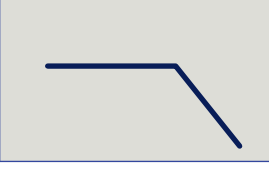
- When should companies use them?
- Which options?
- How much do they cost?
- Are they worth paying for?




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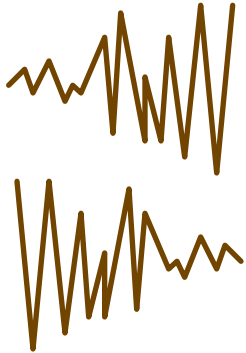
Hockey Sticks


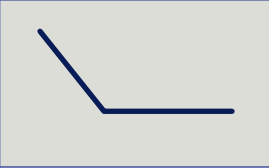

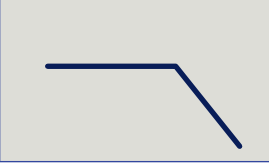
	CALL	PUT
<i>BUY</i>		
<i>SELL</i>		

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View on Direction, Volatility or Both?



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The Hedging Choices

**“Natural”
Hedge?**

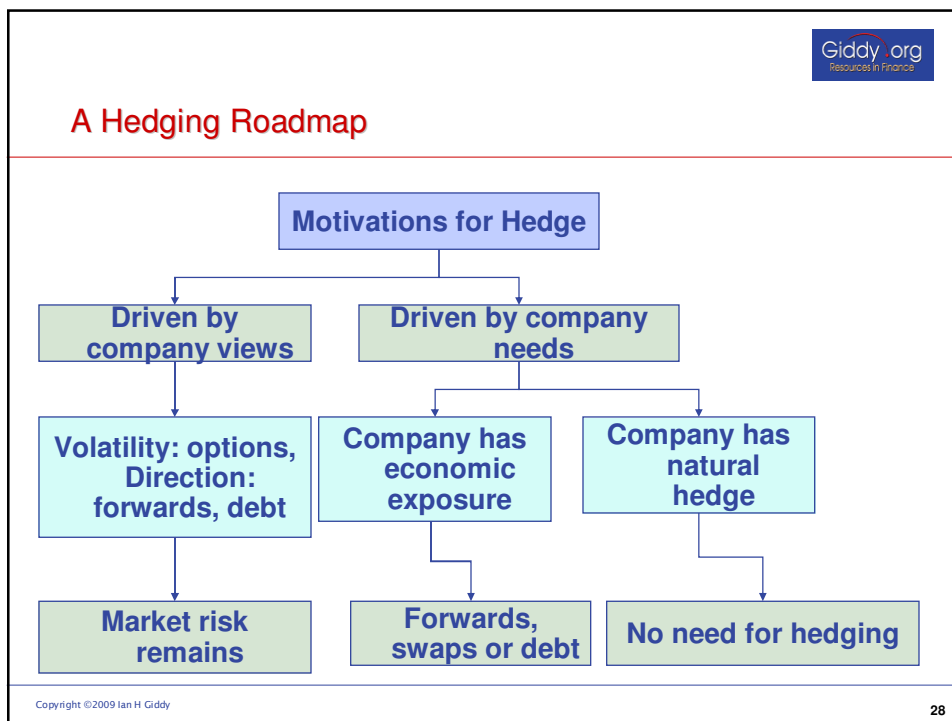
or

Derivatives?

↔

Debt?

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Contact

Prof. Ian Giddy
NYU Stern School of Business
Tel +1.646.8080.746; Fax +1.866.369.9350
ian.giddy@nyu.edu
Web: giddy.org

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